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Mother's Young Alter Brain's Response to Drug

The presence of a mother's young changes the way her brain responds to drugs, according to new animal research. The findings suggest new avenues of treatment for mothers who are recovering drug abusers.

The study was presented at Neuroscience 2010, the annual meeting of the Society for Neuroscience, held in San Diego.

Researchers at Northeastern University used brain imaging techniques to test mother rats a few days after they gave birth. The animals had been exposed to cocaine prior to pregnancy and learned to associate a peppermint scent with drug use.

In the absence of the new pups, mother rats responded normally to the peppermint scent, showing activation in brain regions associated with drug association and craving. However, when the pups were physically present, the mother rats' brains showed an altogether different pattern

of activation, suggesting that the pups themselves changed the way the brain responds to drug cues.

"Drug relapse is especially problematic for recovering drug users who are mothers," said graduate student Martha Caffrey, who led the study. "Maternal care has a profound influence on the offspring's long-term outcome, and insufficient or inappropriate maternal care leads to detrimental changes in their neural structure, and may lay the groundwork for dysfunction in future generations," she said.

Research was supported by the National Institute on Drug Abuse.